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ABSTRACT

The salient role that affective objectives play in compensatory education prompted the study that is the subject of this paper. Analyses were applied to data gathered at the kindergarten, elementary, and secondary levels on four affective instruments and four achievement measures over a two-year period. Relationships found on the first year's data were positive but very small, although significance was reached in some comparisons, partially as a result of the large sample sizes. Additional analyses were carried out using entry-level California Achievement Test (CAT) and affective measures as predictors for end-of-year CAT scores. Further analyses are proceeding on the following year's data. (Author/RC)

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A STUDY OF THE RELATIONSHIP BETWEEN AFFECTIVE AND ACHIEVEMENT MEASURES

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A STUDY OF THE RELATIONSHIP BETWEEN AFFECTIVE AND ACHIEVEMENT MEASURES

Raising a child's self-concept or improving his attitude toward school will not ensure an increase in his achievement level. Research has not and probably will not ever establish a clear linear relationship between affect and achievement. Compensatory education programs which claim that activities designed to improve a child's self-concept or attitude toward school will in turn improve the child's achievement may be well advised either to address improvement in achievement more directly or to set up affective objectives separate from achievement objectives.

Reviewing research literature and analyzing affective and achievement data from the Austin Independent School District have revealed inconclusive patterns of correlations between affective measures and achievement measures. A small positive relationship has often been found; however, the idiosyncracies of evaluation designs, instruments, and local population characteristics make generalizing from the results of these studies difficult.

The Austin studies reported here indicate that ethnic group membership may be a significant factor in the relationship between affect and achievement. Blacks showed the strongest relationship at the elementary levels, Anglos showed the strongest relationship at the secondary level, and Mexican Americans showed no relationship past the kindergarten level.

Public schools have gradually expanded their role from simply the teaching of knowledge to increasingly accepting as their responsibility the social and emotional aspects of the student's life. This is especially evident in may of the compensatory education programs supported by large federal grants through ESEA Title I Regular and Migrant, ESEA Title VII Bilingual, and ESAA. Although the primary mandate for these programs has always been to improve achievement, affective objectives are often found side by side with the achievement objectives. These affective objectives are usually justified by the assumption that increases in a child's positive feelings toward himself and his school will contribute to the meeting of

the achievement objectives. Program developers have also been known to claim that their programs are justified if they "make students feel good about themselves and school" even though achievement is not increased by the program treatment. However, since federal funding sources require increased achievement as the ultimate goal for the programs they sponsor, the possibility must be explored that affective objectives may fail to support achievement objectives and may even be counterproductive in terms of achievement.

At the very least, those who would promote affective objectives with the hope that achievement gains will result should be familiar with the Austin study discussed in this paper and with research literature concerning the relationships between self-concept, attitude toward school, and academic achievement at various grade levels and for different ethnic groups.

RESEARCH LITERATURE

Self-Concept and Achievement by Grade Level

Generally, the research literature shows a small positive relationship between self-concept and achievement across grade levels (3, 12, 14, 20, 21, 23, 29, 34, 36, 38, 39, 40, 47, 48).

Wattenberg and Clifford (47) and Ozehosky and Clark (36) found that self-esteem measures were positively correlated with reading readiness for kindergarten students. Positive relationships between self-concept and reading, math, composite achievement test scores, and grade point averages have been found at the elementary level (12, 14, 20, 29, 34, 39, 45, 48), and junior and senior high levels (3, 21, 23). Pruneda's (40) research indicated a positive correlation between self-concept and achievement at grades 6 and 8, but no relationship between the two factors at grade 10.

Several other authors reviewed the literature on self-concept and academic achievement (4, 14, 16, 42) and reported that a small positive relationship has generally been found at most grade levels. Calsyn (11) investigated the causal relationship between self-esteem and scholastic achievement, and discovered that scholastic achievement appeared to be causally predominant over self-concept. This finding suggests that higher academic achievement may lead to a more positive self-concept, rather than vice versa as assumed in many compensatory education programs.

Several investigators (10, 15, 16), however, have failed to find a relationship between measures of self-concept and achievement in reading, mathematics, and composite achievement test scores. These studies included students from kindergarten through the sixth grade.

Thus, the results of research concerning self-concept and achievement at various grade levels have been mixed, but generally suggest a small positive relationship between these variables.

Self-Concept, Attitude Toward School, and Achievement by Grade Level

The relationship between the attitude of children toward school and their academic achievement by grade level is also of importance to educators. Some positive relationships have been found between measures of students' attitude toward school and achievement at the elementary, junior, and senior high levels (9, 19, 22, 35, 41, 44); however, other researchers have found no relationship between these factors at the elementary and junior high levels (5, 8, 24, 49).

Cole (17) considered both self-concept and attitude toward school as they relate to academic achievement in third graders and found positive relationships between both self-concept and academic achievement, and be-

tween attitude toward school and academic achievement.

Generally, trends in the research literature suggest that both self-concept and attitude toward school show a positive relationship to academic achievement at most grade levels. Unfortunately, research results are not all consistent and therefore must be considered inconclusive.

Ethnicity, Self-Concept, Attitude Toward School, and Achievement

Ethnic group membership has been considered as a variable affecting self-concept, attitude toward school, and achievement in a number of studies (1, 2, 13, 14, 19, 21, 24, 26, 30, 31, 32, 33, 34, 40, 43, 44, 49).

Hispanic and Anglo Students: In research involving Hispanic students (1, 2, 19, 21, 24, 26, 30, 31, 32, 33, 34, 40, 43), findings have been mixed. Evans and Anderson (21) discovered that Mexican American students in their sample had lower self-concepts and lower achievement test scores than their Anglo classmates, but similar grade point averages. Allen (1) found no significant difference in the self-concepts of Anglo, Mexican American, and Black junior high students. Rivera (43) reported that Hispanic students participating in a bilingual program tended to show increased feelings of acceptance and self-worth and a rate of academic progress similar to non-Hispanic students. Layden (26), on the other hand, found that Puerto Rican third graders taught in Spanish had similar self-concepts but somewhat lower achievement than their Puerto Rican age-mates taught in English. None of these studies examined directly the correlation between self-concept and achievement.

Three major compensatory education projects, carried out in Austin, Texas involved primarily Mexican American students and measured both achieve-

ment and affective changes (2, 27, 28, 30, 31, 32, 33). Evaluators had difficulty identifying the specific programmatic activities which were to have produced improved self-concept and more positive attitudes toward school. In each program the affective objectives were met or not met in a non-systematic pattern which suggested that many factors were influencing how the students responded to the test items.

Cron (19) studied the achievement and attitude toward school of Mexican American fifth and sixth graders, and discovered that the students' perceptions of school-related concepts were significantly related to their academic achievement, and that middle and lower class Mexican American students had similar attitudes toward school. LaBelle (24) found that Spanish American and Anglo students in the fifth grade did not differ significantly in their attitudes toward school, and that high achievers did not necessarily perceive school-related concepts more positively than middle and low achievers. LaBelle also found in this study that low socioeconomic status (SES) students had a less positive attitude toward school when compared to higher SES students.

The question of relationship between the self-concept, attitude toward school, and academic achievement of Spanish American students defintely needs further study. Few studies have specifically studied the relationships among these factors, and those which have are inconclusive.

Black and Anglo Students: Studies of Black and Anglo students' self-concept, attitude toward school, and achievement have been carried out by several researchers (13, 14, 44, 49). Canning (13) compared sixth grade students in middle school to those in self-contained classrooms in elementary schools, and found that Black children failed to improve in reading and math in either

situation, while Anglo students made significant gains in both. However, neither Black nor Anglo students made significant gains in self-concept or attitude toward school. When Robertson (44) compared Anglo and Black students' attitude toward school and achievement, he found a significant positive relationship between student ability, school grades, and attitude toward school for both groups, but no significant difference in attitude toward school between Anglo and Black students. Anglo students' attitude toward school correlated positively with the percentage of their class that was Anglo, but Black students' did not. Young (49) found Black students' achievement varied according to the teacher's degree of acceptance and tolerance of them; there were no significant differences in pupil attitude between Anglo and Black students. Caplin (14) discovered that students (both Anglo and Black) who attended de facto segregated schools (greater than 66% Black) had less positive self-concepts and achievement than other students.

It is difficult to draw any conclusions from the limited amount of research that is available concerning the relationships among self-concept, attitude toward school, and achievement for Black students. In general the research literature concerning the effect of ethnic group membership on self-concept, attitude toward school, and academic achievement are incomplete. Some research suggests that socio-economic status may be a better indicator of self-concept and attitude toward school as they relate to achievement than is ethnic background (24, 38). Further research is definitely needed.

Program Participation

Various attempts have been made to determine the effects of participation in different types of programs on self-concept, attitude toward school,

and academic achievement (1, 6, 7, 19, 25, 27, 28, 29, 34, 37, 43, 46). For example, Walker (46) and Lawson (25) compared students in graded and non-graded programs. Walker (46) found that elementary and high school students in non-graded programs had significantly more positive attitudes toward school, higher self-concepts, and tended to have higher achievement. Lawson (25) found no significant differences in the relationship between self-concept and reading achievement at grades one and three for students in graded and non-graded programs.

Black (7) found that fourth grade students in traditional and open area classrooms did not differ in either self-concept or achievement. Lewis and Adank (29) discovered a positive relationship between self-esteem and academic achievement in fourth and sixth graders in both self-contained and individualized classrooms, but found lower anxiety scores for those in individualized classrooms. Phelan (37) found that fourth graders with teachers who employed more informal teaching and organizational methods showed a more positive attitude toward school but lower achievement in reading and composite achievement scores when compared to students exposed to more formal classrooms. No differences were found between formal and informal methods in terms of math achievement or self-concept. Phelan (37) and McKinney (34) both compared elementary students in Title I versus non-Title I schools with conflicting results. Phelan found that students in Title I schools had more positive attitudes toward school, lower achievement, and similar self-concepts to those in non-Title I schools. McKinney found that enrollment in Title I schools did not affect self-concept or academic achievement.

Lee (27, 28) evaluated a two-year ESAA pilot project which studied the effects of trained instructional aides in the classroom. Results revealed declines in self-concept scores, increases in attitude toward school, and no significant changes in achievement for project students. Students in the control group demonstrated opposite trends: increased self-concept scores, declines in attitude toward school, and significant improvements in achievement.

Allen (1) and Beckum (6) studied the effects of programs designed to improve the self-concept and achievement of students. Allen (1) found that a motivation program for junior high students had a slight effect on grades but not on self-concept. Beckum (6) reported that students exposed to a counseling and tutoring program involving social reinforcements showed significantly more improvement in reading achievement and slightly better self-concepts (non-significant) than students rewarded with token reinforcements or those in a control group.

More studies concerning the causal relationship between self-concept, attitude toward school, and achievement, such as that of Calsyn (10) are definitely needed. Additional research which would help to resolve the issue of whether more positive self-concepts lead to higher achievement or vice versa and help to aid in the planning of more successful intervention programs is particularly needed.

Summary

In summary, the research concerning the relationship between affective factors and achievement has been inconclusive. Studies are available which demonstrate a direct relationship between affect and achievement; however, other research concludes just the opposite. The general trend seems to suggest a small positive relationship between these factors. The relation-

ship between affective measures and academic achievement on the basis of ethnic group membership is even farther from being conclusive. Obviously, many factors influence the interaction of affect with students' achievement levels.

THE AUSTIN STUDY

The salient role that affective objectives play in compensatory programs and the inconclusive status of the literature prompted the Austin Independent School District Office of Research and Evaluation to undertake the studies discussed below. Because experimental designs are usually not tenable in public school situations, the decision was made to reanalyze existing data. Two years of data were available through evaluations of compensatory programs and district-wide testing conducted through the Office of Research and Evaluation.

Analyses were applied to data which had been gathered at the kindergarten level and grades 4, 6, and 9-12 on four affective instruments and three achievement measures over a two-year period. Figure 1 shows the instruments and the grade levels at which the instruments were applied. Results of the analyses will be presented below by grade level.

Figure 1: Instruments Employed

Grade	Affective Instrument	Achievement Instrument
K	Primary Self-Concept Scale	Boehm Test of Basic Concepts
4	1) Pier-Harris Self-Concept Scale	California Achievement Test Subscale: Reading Total
	2) School Sentiment Index (Primary)	California Achievement Test Subscales: Reading Total Math Total

NOTE: Figure 1 continued on next page.

Grade	Affective Instrument	Achievement Instrument
6	School Sentiment Index (Intermediate)	California Achievement Test Subscales: Reading Total Math Total
9-12	Survey of Study Habits and Attitudes	Sequential Tests of Educational Progress Subscales: Reading Mechanics of Writing English Expression Math Computation Math Basic Concepts Science Social Studies

Kindergarten

As part of the measurement of objectives for Austin's 1975-1976 ESEA Title VII Bilingual Project, kindergarten students' self-concepts were assessed using the Primary Self-Concept Inventory. A stratified random sample of three boys and three girls were selected from each kindergarten project classroom. This sampling yielded a subset of 146 project students who were 70% Mexican American, 20% Black, and 5% Anglo. The resulting cell sizes for Blacks and Anglos were considered too small to allow meaningful analysis along the dimension of ethnicity.

The achievement instrument used in Austin for kindergarten students is the Boehm Test of Basic Concepts. The total raw scores received by the 146 bilingual project students were correlated using FACTOR from the VSTAT Statistical Package from the University of Texas at Austin. This analysis yielded correlations among the Boehm pretest (September, 1975), Boehm post-test (February, 1976), Boehm gain, and Primary Self-Concept Inventory (April, 1976). Figure 2 presents these correlation coefficients.

Figure 2: Correlation of Kindergarteners' Self-Concept and Achievement

Boehm Test of Basic Concepts	Correlation with Primary Self-Concept Inventory
Pretest (September, 1975)	.0495
Posttest (February, 1976)	.1805*
Gain	.1185

*Significant at .05 level.

The only relationship found to be significant at the .05 level of confidence was between the Boehm posttest scores and the Primary Self-Concept Inventory. This relationship, however, was small (.1805). Thus, there appears to be a small positive correlation between achievement (knowledge of basic concepts) and self-concept for the kindergarten students in this sample; however, the unique characteristics of the population studied imposes limitations on the generalizability of this findings.

Fourth Grade

In the 1974-1975 ESEA Title VII Bilingual Project in Austin, both the Piers-Harris Self-Concept Inventory and the School Sent' .nt Index (Primary Edition) were administered to stratified random samples of three boys and three girls from each fourth grade classroom. The samples for the two affective measures were mutually exclusive. Sufficient sample sizes were obtained to allow analyses to be conducted for both Mexican Americans and Blacks. All testing was conducted in April, 1975.

Program FACTOR was employed to correlate the total raw scores on each of the affective measures with CAT Reading Total raw score. Figure 3 summarizes the correlation coefficients obtained. No significan. relation-

ships were found between affective and achievement measures for Mexican Americans; however, reading achievement was positively and significantly related to both self-concept and attitude toward school for Blacks. The ethnic group membership of students in the bilingual program was a definite factor in the relationships found between affective and achievement measures.

Figure 3: Correlations of Fourth Grade Mexican American and Black Students' Self-Concept and Attitude Toward School With Reading Achievement

	Ethnic Group	
Measure Correlated	Mexican American	Black
CAT Reading/Piers-Harris Self-Concept Scale	.1553 (N = 202)	.1750* (N = 135)
CAT Reading/School Sentiment Index	.1040 (N = 194)	.2248* (N = 134)

*Significant at .05 level.

In April, 1976, Austin's system-wide testing program administered the School Sentiment Index, Primary Edition, to all fourth grade classrooms in 10 randomly selected elementary schools. Figure 4 presents the correlations obtained when the students' total raw scores on the School Sentiment Index were matched with their CAT Reading Total and Math Total raw scores using program FACTOR.

In this analysis, only one correlation significant beyond the .05 level of confidence was found. Fourth grade Anglo students' total raw score on the School Sentiment Index was related positively to their math achievement levels. Neither Blacks' nor Mexican Americans' attitudes toward school correlated significantly with math achievement.

None of the three groups showed a correlation between attitude toward school and reading achievement.

Figure 4: Correlations of Fourth Grade Mexican American, Black, and Anglo Students' Attitude Toward School with Reading and Math Achievement (April, 1976)

School Sentiment Index (Primary Edition) and ...	Ethnic Group: Mexican American	Black	Anglo
CAT Reading Total	.0420 (n-100)	.0335 (n-154)	.0937 (n=396)
CAT Math Total	.1059 (n=100)	.0031 (n=154)	.1981* (n=369)

*Significant at .05 level.

Sixth Grade

Austin's systemwide testing program also administered the School Sentiment Index, Intermediate Edition, to randomly selected classrooms at the sixth grade level. Figure 5 presents the correlations obtained when the students' raw scores on the School Sentiment Index were matched with their CAT Reading Total and Math Total raw scores using program FACTOR.

Figure 5: Correlations of Sixth Grade Mexican American, Black, and Anglo Students' Attitude Toward School with Reading and Math Achievement (April, 1976)

School Sentiment Index (Intermediate Edition) and ...	Ethnic Group: Mexican American	Black	Anglo
CAT Reading Total	.0436 (N = 82)	.2434* (N = 55)	.0905 (N = 285)
CAT Math Total	.0106 (N = 82)	.2797 (N = 55)	.0880 (N = 285)

*Significant at .05 level.

At the sixth grade level, only Black students showed a relationship between affect and achievement. Their achievement test scores in both reading and math correlated positively with their measured attitude toward school. For both Anglos and Mexican Americans, all correlations were non-significant at the .05 level.

Grades 9-12

It was felt that results at the high school level might well be different from those at the elementary level as students become more realistic in their assessments of themselves and more aware of the contribution of learning to their future success. A study of the relationship between the Survey of Study Habits and Attitudes (SSHA) and the Sequential Tests of Educational Progress (STEP) was therefore undertaken. Results showed a small positive correlation between the SSHA and each of the subtests on the STEP (See Figure 6). When the correlations were broken down by ethnicity, however, a different pattern emerged. For Anglo students the pattern was similar to the overall correlations of .3 to .4 on all subtests. Blacks showed smaller correlations, mostly in the range of .2 to .3; again all were significant. For Mexican Americans the correlations were even lower, in the range of .1 to .2 with none significant. (See Figure 6 on following page.)

SUMMARY

Overall, the studies in Austin ISD reveal patterns similar to those generally found in the literature. Where there is a relationship between affective data and achievement data it is small. There are some patterns evident in the Austin ISD data, however, which indicate definite differences by ethnicity.

Figure 6: Correlation coefficients between the Survey of Study Habits and Attitudes (SSHA) and the Sequential Tests of Educational Progress (STEP). Tests were administered to a sample of ninth through twelfth graders in AISD schools in the spring of 1976.

Ethnicity	N	Reading	Mechanics of Writing	English Expression	Math Computation	Math Concepts	Science	Social Studies
Anglo	552	.352*	.404*	.396*	.324*	.282*	.334*	.359*
Black	81	.217*	.305*	.298*	.356*	.267*	.269*	.240*
Mexican American	105	.125	.179	.105	.155	.092	.116	.155
Total	738	.294*	.361*	.341*	.298*	.255*	.287*	.312*

* Significant at .05 level or beyond.

Blacks showed the strongest correlations in the elementary grades and also showed significant relationships at the high school level. Anglos showed the strongest correlations at the high school level. Mexican Americans showed no significant relationships at any grade level past kindergarten.

DISCUSSION

It is clear from both the literature review and our own work in Austin that this area is a difficult one in which to provide definite answers. There are a number of reasons for this difficulty:

1) The measurement of such constructs as self-concept is difficult at best and especially difficult when the measures are being used for students coming from a variety of different cultures.

2) It is almost impossible to design a truly experimental study in this area due to the political and social realities with which school systems and researchers must contend. Treatment groups by ethnicity would be considered an outrageous suggestion by almost any school administrator.

3) Because experimental designs are not feasible, most studies are correlational, and, while providing some idea of whether a relationship exists, they give no indication of the direction of the relationship.

4) The nature of these studies makes most of them non-generalizeable and indicative mostly of local dynamics.

5) Affective instrument validity is seldom investigated.

6) Most instruments which measure self-concept rate positively those responses which students have often been taught are not socially acceptable. The "I'm the Greatest" attitude exhibited by Muhammad Ali, if adopted by a typical student, would probably yield him high scores on a self-concept scale but might also yield disapproval from peers, parents, and teachers. Evan if a student perceived himself in the "Muhammad Ali-I'm the Greatest" image, he would probably also perceive that it would not be a socially acceptable attitude and would therefore respond to items on a self-concept scale in ways that he knew to be socially acceptable.

The conclusions of this study must obviously be tempered with an awareness of the problems listed above. Other issues should also be considered by planners of compensatory programs.

1) A question which is raised in comparing affective measures with achievement measures in order to decide on the appropriateness of affective objectives for compensatory education programs is whether students' feelings and attitudes are important enough in and of themselves to warrant measurement. Programmatic activities to improve these feelings and attitudes would of course follow if the decision were yes and if funding sources could be convinced of the merit of these objectives and activities without consideration of achievement.

2) If no relationship, or only a very small one, exists between affective and achievement measures, the question must be considered whether program resources should be channeled more directly into achievement objectives and activities rather than attempting to raise achievement indirectly through more positive attitudes.

The results of this study taken in conjunction with the research literature, the pertinent philosophical issues, and the problems inherent in the measurement of affect, lead to a conclusion by the authors that the use of affective objectives for compensatory programs is to be recommended only with very careful consideration of the points covered in this paper. Echnicity is particularly to be considered by those who would formulate affective objectives in the hope that increases in attitudinal scores will lead to increased achievement. Such objectives may be particularly inappropriate for Mexican American students.

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